Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A method of forming a microelectronic structure comprising;

forming a diamond layer on a substrate, wherein the diamond layer comprises defects; and

forming pores in the diamond layer by removing a substantial amount of the defects from the diamond layer.

2. (Original) The method of claim 1 wherein forming pores in the diamond layer comprises reducing the dielectric constant of the diamond layer by forming pores in the diamond layer.

3. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises forming a diamond layer on a substrate by chemical vapor deposition.

4. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises exposing the substrate to a gas comprising a hydrocarbon and hydrogen, wherein the hydrocarbon concentration is above about 10 percent of the hydrogen concentration.

5. (Original) The method of claim 4 wherein exposing the substrate to a gas comprising a hydrocarbon comprises exposing the substrate to a gas comprising methane.

6. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises forming a diamond layer on a substrate wherein the diamond layer comprises at least one of double bonds, vacancies or interstitials.

7. (Original) The method of claim 1 wherein removing the defects from the diamond layer comprises etching the defects from the diamond layer.

8. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to oxygen gas at a temperature below about 450 degrees Celsius.

9. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to oxygen gas and utilizing a rapid thermal anneal process.

10. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to at least one of a hydrogen plasma or an oxygen plasma.

11. (Original) The method of claim 10 wherein exposing the defects to a hydrogen plasma comprises reducing the coefficient of friction of a top surface of the diamond layer by passivating the top surface of the diamond layer with hydrogen.

12. (Original) The method of claim 1 wherein forming a diamond layer comprises
forming the diamond layer in a deposition chamber of a cluster tool.

13. (Original) The method of claim 1 wherein forming pores in the diamond layer
comprises forming pores in the diamond layer in an oxidation chamber of a cluster tool.

14. (Original) The method of claim 1 further comprising:

forming a second diamond layer on the diamond layer in a deposition chamber of a cluster tool: and

forming pores in the second diamond layer in an oxidation chamber of the cluster tool.

15. (Original) A method of forming a microelectronic structure comprising:

forming a first diamond layer on a substrate, wherein the first diamond layer comprises a mixture of sp2 bonds and sp3 bonds; and

exposing the first diamond layer to a hydrogen plasma, wherein the sp2 bonds are substantially removed from a top portion of the first diamond layer.

16. (Original) The method of claim 15 wherein forming a first diamond layer comprises forming a first diamond layer by utilizing a plasma comprising a concentration of methane that is above about 10 percent of a concentration of hydrogen.

17. (Original) The method of claim 15 wherein exposing the first diamond layer to a hydrogen plasma comprises converting the top portion of the first diamond layer to form a substantially sp2 free diamond layer by exposing the first diamond layer to a hydrogen plasma.

18. (Original) The method of claim 15 further comprising forming a second diamond layer disposed on the substantially sp2 free diamond layer, wherein the second diamond layer comprises a mixture of sp2 and sp3 bonds, by utilizing a plasma comprising a concentration of methane that is above about 10 % of a concentration of hydrogen.

19-31. (Cancelled)